

Dpd-7578

October 28, 1959

File No.: 434

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TO:

FROM:

SUBJECT: Field Trip

ILLEGIB

This report covers a two week field trip to FOG. The purpose of this trip was to evaluate the amount of interference contributed by the Tracker to System IV operation and to make Tracker modifications to minimize this interference. Vehicle #720 was scheduled to make the flight tests. This vehicle was considered "clean". Work has been done on the cockpit fan, beacon light, etc. to reduce their interference with System IV.

A flight test was scheduled for Oct. 13, 1959. I arrived at the station on Oct. 12, 1959 for evaluation of this test. The test would consist of a System IV and a modified Tracker, S/N 224. The Tracker would be turned off and on for specific periods thereby enabling us to compare System IV performance with the Tracker both on and off. Unfortunately, "nephographic mission requirements" had been added to this mission and the Tracker could not be turned off. So even though the mission went as scheduled it was of no use to us.

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A meeting with [REDACTED] followed and he arranged to have a test flight set up for Friday, Oct. 16. The Vehicle #720 was due an engine change and a test hop. As it turned out the test hop did not come off until late Friday, so we lost this test. Another test was set up for Wed., Oct. 21.

In the meantime some field strength test equipment was located at another station and arrangements were made for us to obtain this gear. It was Thurs., Oct. 15 when we finally got the equipment.

Tracker S/N 224 was set up in a screen room and tests were made to determine radiated and conducted interference from the Tracker, using the field strength test equipment. Results indicated the motors were not offending but that relay and switch action in the Tracker produced RF interference considerably above the threshold level of System IV. This interference was both conducted back through the power cable and radiated through the covers. The RF frequencies back through the line were strongest at [REDACTED] 25X4

A filter box was designed and fabricated to eliminate this conducted interference. To eliminate radiated interference, all rubber gaskets on the Tracker covers were replaced with RF interference stripping. Also an elaborate method of wrapping the Tracker with aluminum foil and polyethylene sheeting was devised. This consisted of wrapping the Tracker with one layer of aluminum foil, followed by a layer of polyethylene sheeting, followed by another layer of aluminum foil. The exact method of wrapping is quite elaborate since any openings in the wrapping act as small wave guides and actually increases the intensity of radiated interference at these points.

By the time all these modifications had been completed it was Wed., Oct. 21. The Tracker was prepared, and the inside of the System IV hatch was covered with aluminum foil so that theoretically System IV would only pick up signals generated in the equipment bay. The test flight went as scheduled. The Tracker and beacon light were turned off and on at specific times, in such a way that we could differentiate Tracker and beacon interference.

ON THURSDAY, OCT. 22 THE SYSTEM IV TAPE AND FILM WERE READ OUT. RESULTS INDICATED THAT THE VEHICLE WAS NOT AS CLEAN AS THOUGHT AND THE BEACON LIGHT WAS STILL INTERFERING CONSIDERABLY. NO WHERE ON THE TAPE OR FILM COULD ANY INTERFERENCE FROM THE TRACKER BE DETECTED. NOT WISHING TO TAKE THE RESULTS OF ONE TEST TO BE CONCLUSIVE, ANOTHER TEST WAS SCHEDULE FOR THURSDAY, OCT. 29.

During the following days the Tracker was returned to the screen room and more tests made in hopes of reducing the three layer wrapping procedure which was difficult and time consuming from an operational viewpoint. Results indicated that one layer of aluminum foil was satisfactory if the Tracker control panel was covered by a copper plate to block out the radiated interference coming through the plastic panel. The Oct. 29th test will go with this type of modification. If the results of this test are favorable, a more technically complete report will follow which will outline plans for detachment kits.

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I wish to express my thanks for the work done by [REDACTED] of Ramo-Wooldridge on this problem. This was a joint effort throughout which resulted in considerable progress being made.

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